

Remarks

The Applicants acknowledge the restriction requirement and confirm the earlier election of Claims 1-6. Claims 7-14 have been canceled.

The Applicants note with appreciation the indication that Claim 4 would be allowable if rewritten into independent form. Claim 4 has been accordingly been rewritten into two separate independent Claims 15 and 16, new Claim 15 also including the subject matter of Claim 2, while Claim 16 does not contain the subject matter of Claim 2 by virtue of the multiple dependency associated with Claim 3. Allowance of Claims 15 and 16 is respectfully requested.

Claims 1 and 5 have been amended to clarify that the relationship between clearance C and the distance L are maintained/controlled by a controller. The claimed relationship does not inherently occur, but is carefully controlled by the controller so that the relationship satisfies the equation as set forth in Claims 1 and 5 and as is shown in Fig. 4 of the drawings.

Turning now to the merits, we respectfully submit that independent Claims 1 and 5 (as well as their associated dependent claims) distinguish over JP '441. The Applicants, were, of course fully aware of JP '441 and describe it in the description of the related art section of the specification. There are certain similarities of the apparatus disclosed in JP '441. Such similarities can be seen by reference to the JP '441 drawings.

However, there are significant and important differences not disclosed, taught or suggested. These differences are manifested in Figs. 6 and 7 of the Applicants' drawings, for example, wherein the significant improvements brought about by the invention are visually shown. These advantages are brought about by virtue of the careful control of the claimed distances C and L within the prescribed region as set forth in the equation contained within Claims 1 and 5 and as shown in Fig. 4 of the drawings. The Applicants respectfully submit that this important difference is surely not taught or suggested by JP '441 and was, in fact, not appreciated at all.


The critical omission of JP '441 resides with the failure to have an appreciation for the distance L. Careful scrutiny of the entire JP '441 disclosure, including the drawings, demonstrates a complete lack of identification of the L distance as having any importance.

That distance, is, of course the distance between the end portion of the gas jet port of the edge wiping nozzle and the gas impingement point of the face wiping jet. This distance, in conjunction with distance C, when maintained within the equation set forth in Claims 1 and 5, brings about a superior result not previously contemplated in JP '441.

By virtue of the failure of JP '441 to appreciate the distance L, it inherently follows that such disclosure is inherently deficient with respect to providing teachings to those of ordinary skill in the art to make modifications to JP '441 that could or would provide an advantage. In that regard, it is important in determining obviousness not only that there be teachings and/or suggestions to make a modification or modifications, but that one of ordinary skill in the art would have a reasonable expectation of success in making such a modification. Unfortunately, JP '441 fails both prongs of this fundamental test. There is simply no teaching or suggestion in JP '441 that there is any importance whatsoever associated with distance L, much less any teachings or suggestions that the distance L, when taken in conjunction with distance C, would have any effect at all. Also, JP '441, by virtue of its silence on distance L, would provide one of ordinary skill in the art with no expectation of success, much less a reasonable expectation of success. We, therefore, respectfully submit that JP '441 cannot support a rejection under §103. Withdrawal of the rejection based on JP '441 is accordingly respectfully requested.

In light of the foregoing, we respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,


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In the Claims (Clean Copy as amended)

1. (Amended) A gas wiping apparatus comprising:

face gas wiping nozzles extending widthwise of a strip material lifted from a liquid bath and caused to travel continuously upwardly along a jet treatment path, said strip having front and back surfaces and side edges, said strip carrying bath liquid on its surfaces by pickup from said bath,

said face gas wiping nozzles being adjacent to said jet treatment path and being directed to jet gases onto said front and back surfaces of said strip material, and being aimed at an impingement area on said front and back surfaces of said strip material, thereby limiting the pickup of said bath liquid carried by said front and back surfaces of said strip material;

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a pair of baffle plates spaced from said edges of said strip material and in a position adjacent to said gas impingement area; said baffle plates having a clearance C from said edges of said strip material;

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edge wiping nozzles disposed between each of said baffle plates at its inner edge and adjacent an edge of said strip material, each said edge wiping nozzle being provided with an edge wiping gas jet port positioned adjacent said gas impingement area, each said edge wiping nozzle being positioned for jetting a gas in a widthwise direction relative to said strip material and substantially parallel to each adjacent edge of said strip material; and

a controller which maintains said clearance C between said edge of said strip material and said inner edge of said baffle plate within the range from 4 to 7 mm such that when the distance measured along the lifting movement of said strip material between said gas jet port of said edge wiping nozzle and said gas impingement point of said face wiping jet is expressed as L (mm), the relationship between said dimension L and said clearance C (mm) satisfies the following equation:

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

4. (Amended) A gas wiping apparatus according to Claim 3, wherein the controller maintains in a preset range the clearance between either one or both of said baffle plate and said edge wiping nozzle, and said edge of said strip material.

5. (Amended) Gas wiping apparatus for wiping a moving metal strip having two opposed faces and two opposed edges, comprising:

(a) slit jet gas nozzles adjacent to and aimed at both of said opposed faces at a designated area on said metal strip,

(b) edge jet nozzles aimed at and adjacent to both said opposed edges,

(c) a pair of spaced-apart baffle plates adjacent each of said edge jet nozzles, and spaced from an adjacent edge of said strip such that said edge jet nozzles are spaced, along the path of travel of said moving metal strip, from said designated area by a distance L, and

(d) a controller connected to maintain said jet nozzles such that each are spaced from the adjacent edge of said metal strip at a distance C which is 4 to 7 mm,

and maintain the relationship between said distances L and C in millimeters to satisfy the equation

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

Please add the following new claims:

15. (New) A gas wiping apparatus comprising:

face gas wiping nozzles extending widthwise of a strip material lifted from a liquid bath and caused to travel continuously upwardly along a jet treatment path, said strip having front and back surfaces and side edges, said strip carrying bath liquid on its surfaces by pickup from said bath,

said face gas wiping nozzles being adjacent to said jet treatment path and being directed to jet gases onto said front and back surfaces of said strip material, and being aimed

at an impingement area on said front and back surfaces of said strip material, thereby limiting the pickup of said bath liquid carried by said front and back surfaces of said strip material;

a pair of baffle plates spaced from said edges of said strip material and in a position adjacent to said gas impingement area; said baffle plates having a clearance C from said edges of said strip material;

edge wiping nozzles disposed between each of said baffle plates at its inner edge and adjacent an edge of said strip material, each said edge wiping nozzle being provided with an edge wiping gas jet port positioned adjacent said gas impingement area, each said edge wiping nozzle being integrally fixed to said baffle plate and positioned for jetting a gas in a widthwise direction relative to said strip material and substantially parallel to each adjacent edge of said strip material;

drive means for driving either one or both of said baffle plate and said edge wiping nozzle such that the same are adjustably movable toward and away from said strip material; and

control means for controlling said drive means to maintain in a preset range the clearance between either one or both of said baffle plate and said edge wiping nozzle, and said edge of said strip material,

wherein said clearance C between said edge of said strip material and said inner edge of said baffle plate is within the range from 4 to 7 mm;

when the distance measured along the lifting movement of said strip material between said gas jet port of said edge wiping nozzle and said gas impingement point of said face wiping jet is expressed as L (mm), the relationship between said dimension L and said clearance C (mm) satisfies the following equation:

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

16. (New) A gas wiping apparatus comprising:

face gas wiping nozzles extending widthwise of a strip material lifted from a liquid bath and caused to travel continuously upwardly along a jet treatment path, said strip having front and back surfaces and side edges, said strip carrying bath liquid on its surfaces by pickup from said bath,

said face gas wiping nozzles being adjacent to said jet treatment path and being directed to jet gases onto said front and back surfaces of said strip material, and being aimed at an impingement area on said front and back surfaces of said strip material, thereby limiting the pickup of said bath liquid carried by said front and back surfaces of said strip material;

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a pair of baffle plates spaced from said edges of said strip material and in a position adjacent to said gas impingement area; said baffle plates having a clearance C from said edges of said strip material;

edge wiping nozzles disposed between each of said baffle plates at its inner edge and adjacent an edge of said strip material, each said edge wiping nozzle being provided with an edge wiping gas jet port positioned adjacent said gas impingement area, each said edge wiping nozzle being positioned for jetting a gas in a widthwise direction relative to said strip material and substantially parallel to each adjacent edge of said strip material;

drive means for driving either one or both of said baffle plate and said edge wiping nozzle such that the same are adjustably movable toward and away from said strip material; and

control means for controlling said drive means to maintain in a preset range the clearance between either one or both of said baffle plate and said edge wiping nozzle, and said edge of said strip material,

wherein said clearance C between said edge of said strip material and said inner edge

of said baffle plate is within the range from 4 to 7 mm; and

when the distance measured along the lifting movement of said strip material between said gas jet port of said edge wiping nozzle and said gas impingement point of said face wiping jet is expressed as L (mm), the relationship between said dimension L and said clearance C (mm) satisfies the following equation:

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

Please cancel Claims 7-14 without prejudice and without disclaimer of the subject matter contained therein.